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EXAMINER

DOVE, TRACY MAE

ART UNIT	PAPER NUMBER
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1745

DATE MAILED: 01/25/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

10/664,345

Applicant(s)

HEALY ET AL.

Examiner

Tracy Dove

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 15 November 2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 21-40 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 21-40 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

### **DETAILED ACTION**

This Office Action is in response to the communication filed on 11/15/05. Applicant's arguments have been considered, but are not persuasive. Claims 21-40 are pending. Claims 1-20 have been canceled. This Action is made FINAL, as necessitated by amendment.

#### ***Claim Objections***

Claim 23 is objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form.

Claim 40 is objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form.

#### ***Claim Rejections - 35 USC § 112***

Claim 21 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The claim recites the phrases "a first surface area perimeter" and "a second surface area perimeter", which are indefinite. It is unclear what a "surface area" of a "perimeter" encompasses. Examiner suggests the term "surface" or the term "perimeter" be deleted entirely from claim 21.

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In view of the 35 U.S.C 112, 2<sup>nd</sup> paragraph, rejection above regarding the term “surface area perimeter”, see the following prior art rejections.

***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 21-26, 32, 39 and 40 are rejected under 35 U.S.C. 102(b)/103(a) as being anticipated by, and alternatively unpatentable over, Matlock et al., US 6,261,711 B1.

Matlock teaches a sealing system for a fuel cell. Figure 7 shows a fuel cell comprising an anode catalyst layer 308, a cathode catalyst layer 308', an electrolyte layer 306, an anode diffusion layer 312, a cathode diffusion layer 312', an anode flow plate 200, a cathode flow plate 200' and an insulating gasket seal 199. As shown in Figure 7, the edges of the cathode catalyst layer 308' are closer than the edges of the anode catalyst layer 308 to the edges of the electrolyte layer 306. The membrane may comprise Nafion<sup>TM</sup>. The anode catalyst layer has a surface area, in contact with the electrolyte, that is less than a surface area, in contact with the electrolyte, of the cathode catalyst layer. As shown in Figure 7, the anode catalyst layer 308 is sized by gasket

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199 and cathode catalyst layer 308' is sized by gasket 110. Note both layer 312 and layer 200 diffuse gas to the anode catalyst layer 308. The MEA has a thickness of 0.002 inches (~50  $\mu\text{m}$ ) (5:42-47 and Example 1).

Thus the claims are anticipated. The claims are alternatively unpatentable because one of skill would have reasonably concluded that the surface area of the cathode catalyst layer is greater than a surface area of the anode catalyst layer in view of Figure 7 of Matlock.

\*

Claims 27-31, 33 and 34 are rejected under 35 U.S.C. 103(a) as being unpatentable over Matlock et al., US 6,261,711 B1.

Matlock teaches a sealing system for a fuel cell. Figure 7 shows a fuel cell comprising an anode catalyst layer 308, a cathode catalyst layer 308', an electrolyte layer 306, an anode diffusion layer 312, a cathode diffusion layer 312', an anode flow plate 200, a cathode flow plate 200' and an insulating gasket seal 199. As shown in Figure 7, the edges of the cathode catalyst layer 308' are closer than the edges of the anode catalyst layer 308 to the edges of the electrolyte layer 306. The membrane may comprise Nafion<sup>TM</sup>. The anode catalyst layer has a surface area, in contact with the electrolyte, that is less than a surface area, in contact with the electrolyte, of the cathode catalyst layer. As shown in Figure 7, the anode catalyst layer 308 is sized by gasket 199 and cathode catalyst layer 308' is sized by gasket 110. Note both layer 312 and layer 200 diffuse gas to the anode catalyst layer 308. The MEA has a thickness of 0.002 inches (~50  $\mu\text{m}$ ) (5:42-47 and Example 1).

Matlock does not explicitly teach the surface area or thickness values of the anode catalyst layer and/or the cathode catalyst layer. Matlock does not explicitly teach the spacing

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between the edges of the cathode catalyst layer and the electrolyte layer edges or the spacing between the edges of the anode catalyst layer and the electrolyte layer edges.

However, the invention as a whole would have been obvious to one having ordinary skill in the art at the time the invention was made because one of skill would have known that the area/thickness of the catalyst layers, in contact with the electrolyte, could have been varied depending on the desired size (power output) of the fuel cell. Furthermore, the courts have held that where the only difference between the prior art and the claimed invention was a recitation of relative dimensions (surface area, thickness) of the claimed device and a device having the claimed relative dimensions would not perform differently than the prior art device, the claimed device was not patentably distinct from the prior art device. See MPEP 2144.04. Claims 27-31, 33 and 34 recite dimensions only of the claimed membrane electrode assembly.

\*

Claims 35-38 are rejected under 35 U.S.C. 103(a) as being unpatentable over Matlock et al., US 6,261,711 B1 in view of Benz et al., US 6,408,966 B1.

Matlock teaches a sealing system for a fuel cell. Figure 7 shows a fuel cell comprising an anode catalyst layer 308, a cathode catalyst layer 308', an electrolyte layer 306, an anode diffusion layer 312, a cathode diffusion layer 312', an anode flow plate 200, a cathode flow plate 200' and an insulating gasket seal 199. As shown in Figure 7, the edges of the cathode catalyst layer 308' are closer than the edges of the anode catalyst layer 308 to the edges of the electrolyte layer 306. The membrane may comprise Nafion<sup>TM</sup>. The anode catalyst layer has a surface area, in contact with the electrolyte, that is less than a surface area, in contact with the electrolyte, of the cathode catalyst layer. As shown in Figure 7, the anode catalyst layer 308 is sized by gasket

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199 and cathode catalyst layer 308' is sized by gasket 110. Note both layer 312 and layer 200 diffuse gas to the anode catalyst layer 308. The MEA has a thickness of 0.002 inches (~50  $\mu\text{m}$ ) (5:42-47 and Example 1).

Matlock does not explicitly state the fuel cell powers a drive system of an automobile.

However, Benz teaches a fuel cell vehicle (automobile) comprising an electric drive system and a fuel cell system for providing electric energy for the drive system (abstract). A high-hydrogen reformat gas is used as the anode reactant. The hydrogen reformat gas is formed by a reactor unit (fuel processor). The figure shows a fuel cell vehicle comprising the reactor unit 9, fuel storage 11, drive system 36, system control 35 (energy conversion for receiving and regulating electricity) and fuel cell 1. System control 35 serves as an interface between the fuel cell and the drive system. Electric motors are fed by the electric energy which is generated by the fuel cell and fed from the fuel cell to the system control and from there to the drive system (5:4-18).

Therefore, the invention as a whole would have been obvious to one having ordinary skill in the art at the time the invention was made because it is well known that fuel cell are used to power an automobile. Both Benz and Matlock teach polymer electrolyte fuel cells. Thus, one of skill would have been motivated to use the fuel cell of Matlock for the fuel cell vehicle of Benz.

Regarding claim 38, the courts have held that where the only difference between the prior art and the claimed invention was a recitation of relative dimensions (surface area, thickness) of the claimed device and a device having the claimed relative dimensions would not perform differently than the prior art device, the claimed device was not patentably distinct from the prior

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art device. See MPEP 2144.04. Claim 38 recites dimensions only of the claimed membrane electrode assembly.

### ***Response to Arguments***

Applicant's arguments filed 11/15/05 have been fully considered but they are not persuasive.

Applicant argues the relative sizes of the anode and cathode catalyst surface areas are neither disclosed nor suggested. Examiner disagrees and believes Figure 7 at least suggests the relative sizes of the anode and cathode catalyst surface areas. Figure 7 shows that the parallel first and second edges of the cathode catalyst layer extend beyond the parallel first and second edges of the anode catalyst layer. Even if the parallel third and fourth edges of the cathode catalyst layer extended the same distance as the parallel third and fourth edges of the anode catalyst layer (not shown in the Figure), the surface area of the cathode catalyst layer would still be greater than the surface area of the anode catalyst layer.

The claims do not require *the entire perimeter* of either the anode catalyst layer or the cathode catalyst layer be sized by a gasket. Note the independent claims do not require any gasket.

### ***Conclusion***

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO**



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MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.



**TRACY DOVE**  
**PRIMARY EXAMINER**

January 20, 2006